Rhodora

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FRANK SHIPLEY COLLINS
MERRITT LYNDON FERNALD
HOLLIS WEBSTER } Associate Editors.
WILLIAM PENN RICH
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JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 4 November, 1902 No. 47

NOTES ON NEW ENGLAND HEPATICAE.

ALEXANDER W. EVANS.

THE species noted below are for the most part recent additions to the hepatic flora of New England, several of them in fact being new to the range of Gray's Manual. Attention is also called to a few species which have been variously understood by hepaticologists and which are even now in more or less confusion with regard to their synonymy. All of the species noted, with the exception of *Kantia Sullivantii* and *Radula obconica*, also occur in Europe. The arrangement follows that of Schiffner in Engler and Prantl's "Die Natürlichen Pflanzenfamilien."

1. RICCIA CRYSTALLINA L. A few specimens of this well known species were collected by E. B. Harger at Oxford, Connecticut, in 1898. The plant has a rather wide distribution in North America but has not hitherto been reported from any stations nearer than Illinois.

2. GYMNOMITRIUM CORALLIOIDES Nees, Naturgeschichte der europ. Lebermoose, 1: 118. 1833. *Acolea corallioides* Dumort. Recueil d'Obs. sur les Jung. 23. 1835. *Cesia corallioides* Carruth. Jour. Bot. 3: 300. 1865. A few fragments of this distinctly alpine species were found in 1897 by Professor Farlow on Mt. Washington, and during the past summer the writer collected several additional specimens along the Crawford Bridle Path. The only North American stations for the species which have hitherto been recorded are Alaska, the Yukon Territory and Greenland, and its discovery in the White Mountains is therefore of much interest. *G. corallioides* often grows in company with *G. concinnatum*, which is rather abundant in the White Mountains at high altitudes. The former is however a smaller species with more closely imbricated leaves and its color,

which varies from gray to brownish-black, does not show the yellowish tints which are occasionally seen in the commoner species. *G. coralliioides* is further distinguished by its hyaline leaf-margins.

3. MARSUPELLA USTULATA (Hüben.) Spruce, Rev. Bryol. **8**: 100. 1881. *Gymnomitrium adustum* Nees, Naturgeschichte der europ. Lebermoose, **1**: 120. 1833 (in part). *Jungermannia ustulata* Hüben. Hep. Germ. 132. 1834 (*teste* Spruce). *Sarcoscyphus adustus* Spruce, Ann. and Mag. Nat. Hist. II. **4**: 196. 1849. *Nardia adusta* Carringt. Brit. Hep. 20. 1874. *Sarcoscyphus Sprucei* Limpr. Jahresb. Schles. Gesell. vaterl. Cultur, **58**: 179. 1881. *Sarcoscyphus ustulatus* Kiær, Christiania Vidensk. Selsk. Forhandl. 1884[12]: 82. *Marsupella adusta* Underw.; A. Gray, Manual, 721. 1890 (not Spruce). *Marsupella Sprucei* Steph. Bull. de l'Herb. Boissier, II. **1**: 156. 1901. The present species is not uncommon in the alpine region of the White Mountains and has been found there by several collectors. It is much smaller than either *M. emarginata* or *M. sphacelata* and may be distinguished also by its very dark purplish-black color and by its paroicous inflorescence. It is probable that other minute *Marsupellae* occur in the higher mountains of New England but none of them have yet been detected with certainty. For a long time it was supposed that *M. ustulata* was identical with *Gymnomitrium adustum* Nees, but, as Limpricht pointed out, this old species was a composite and included two species of *Marsupella* as well as a true *Gymnomitrium*. Reserving the name *adustum* for the latter he gave the name *Sarcoscyphus Sprucei* to one of the species of *Marsupella* and *S. pygmaeus* to the other. A few months later Spruce described *M. ustulata* as a *new species* and applied the name *M. adusta* to the *Gymnomitrium*. This was in accordance with Spruce's view that *Marsupella* and *Gymnomitrium* were not generically distinct. Stephani recognizes both *M. ustulata* and *M. Sprucei* as distinct species, but other European writers consider them to be forms of a single species, an opinion with which the writer would also agree. In the latter case Spruce's name would apparently have to be discarded on account of the slight priority of Limpricht's. According to Pearson,[1] however, Spruce himself came to the conclusion that *M. ustulata* was the same as the old *Jungermannia ustulata* of Hübener, but whether he based his opinion on an examination of Hübener's type does not appear. *J.*

[1] Hep. Brit. Isles, 382. 1901.

ustulata was long ago reduced by Nees von Esenbeck to a synonym of *Sarcoscyphus Ehrharti* (= *Marsupella emarginata*),[1] and until it was revived by Pearson had practically disappeared from hepaticological literature.

4. NARDIA HAEMATOSTICTA (Nees) Lindb.[2] This species was discovered by the writer close to the Crawford Bridle Path in the summer of 1902. Only two other North American localities, Greenland and Alaska, have been recorded.

5. NARDIA HYALINA (Lyell) Carringt. No New England stations for this species are given in the Manual, but apparently it is not uncommon. Specimens from the following localities are in the writer's herbarium: Jerusalem, Maine (*J. F. Collins*); Newfane, Vermont (*M. A. Howe*); Middletown and Hamden, Connecticut (*A. W. E.*). Specimens have also been examined from Massachusetts.

6. LOPHOZIA BICRENATA (Schmid.) Dumort. Recueil d'Obs. sur les Jung. 17. 1835. *Jungermannia bicrenata* Schmid. Ic. Plant. 3: 250. *pl. 64, f. 2.* 1797. By most American authors this species has been referred to *J. excisa* Dicks., and it is described under this name in the sixth edition of the Manual. It is probable that the true *J. excisa* was a composite species including among others the *J. bicrenata* of Schmidel, but there is so much uncertainty about it that some European writers have given up the name altogether while others reserve it for *J. capitata* Hook. (= *J. intermedia* Lindenb.), a very different species from *Lophozia bicrenata*. *J. capitata* is described in the Manual as *J. excisa*, var. *crispa* Hook. and has not yet been definitely reported from New England. *L. bicrenata* on the contrary is not uncommon and is usually found growing on the earth in woods or along their borders. It has been collected from near the coast to an altitude of 5000 ft. in the White Mountains and does not vary markedly in different localities. To the description given in the Manual it may be added that the inflorescence is paroicous and that the plants, which are usually more or less tinged with reddish, commonly give off a peculiar aromatic odor. New England specimens from the following stations are in the writer's herbarium: Crawford Bridle Path and Jackson, New Hampshire (*A. W. E.*); Andover,

[1] Naturgeschichte der europ. Lebermoose, 2: 417. 1836.

[2] A full description of this species by the writer may be found in Proc. Wash. Acad. 2: 296. 1900.

Vermont (*W. G. Farlow*); Woods Holl, Massachusetts (*A. W. E.*); Orange and Hamden, Connecticut (*A. W. E.*).

7. LOPHOZIA FLOERKII (Web. & Mohr) Schiffn.; Engler & Prantl, Nat. Pflanzenfam. 1[3]: 85. 1893. *Jungermannia Floerkii* Web. & Mohr, Bot. Taschenb. 410. 1807. *J. Naumanni* Nees; Martius, Fl. Crypt. Erlang. 143. *pl. 4, f. 16.* 1817. *J. barbata*, var. *Floerkii* Nees, Naturgeschichte der europ. Lebermoose, 2: 168. 1836. *J. lycopodioides*, var. *Floerkii* Lindb. Musc. Scand. 7. 1879. Mt. Washington, New Hampshire (*W. G. Farlow, A. W. E.*).

8. LOPHOZIA LYCOPODIOIDES (Wallr.) Cogn. Bull. Soc. roy. Bot. de Belgique, 10: 278. 1872. *Jungermannia lycopodioides* Wallr. Fl. Crypt. Germ. 1: 76. 1831. *J. barbata*, var. *lycopodioides* Nees, Naturgeschichte der europ. Lebermoose, 2: 185. 1836. Mt. Katahdin, Maine (*J. F. Collins*); Thorn Mt. and Carter Dome, New Hampshire (*A. W. E.*).

9. LOPHOZIA LYONI (Tayl.) Steph. Bull. de l'Herb. Boissier, II. 2: 157. 1902. *Jungermannia quinquedentata* Huds. Fl. Angl. 511. 1762? Web. & Mohr, Bot. Taschenb. 430. 1807? *J. barbata*, var. *quinquedentata* Nees, Naturgeschichte der europ. Lebermoose, 2: 196. 1836. *J. Lyoni* Tayl. Trans. Bot. Soc. Edinburg, 1: 116. *pl. 7.* 1844. *Lophozia quinquedentata* Cogn. Bull. Soc. roy. Bot. de Belgique, 10: 279. 1872. Mt. Kineo, Moosehead Lake, Maine (*M. L. Fernald*); Jackson, New Hampshire (*A. W. E.*); Mt. Mansfield, Vermont (*W. G. Farlow*); Meriden, Connecticut (*A. W. E.*).

The three species just quoted together with *L. gracilis* (Schleich.) Steph. (= *Jungermannia barbata*, var. *attenuata* Mart. of the Manual) have sometimes been regarded as distinct species, sometimes as well marked varieties of *L. barbata* (Schreb.) Dumort. Nearly all recent writers hold to the former view, recognizing five northern species in the "*barbata*"-group, but Pearson recognizes only four species looking upon *L. Floerkii* as a variety of *L. lycopodioides*, an opinion which has the sanction of Lindberg. With a little care it is not difficult to distinguish these five species, and, with the exception of *L. Floerkii* and *L. lycopodioides*, they show no tendency to vary into one another. *L. gracilis* is not uncommon in mountainous regions and is the smallest species of the group. It may usually be recognized at a glance by its upright flagelliform branches which bear gemmae near the apex and closely appressed leaves in the lower part. These branches, which are similar in appearance to the gemmiparous

branches of *Odontoschisma denudatum* and *Kantia Trichomanis* are sometimes very abundant, covering over an entire tuft of the plant, but sometimes they are very sparingly produced.

Of the other four species *L. barbata* and *L. Lyoni* agree with each other in having inconspicuous or obsolete underleaves and in lacking marginal appendages of any sort near the postical bases of the leaves, while *L. Floerkii* and *L. lycopodioides* agree in having large and conspicuous bifid underleaves and in developing clusters of slender branched cilia near the postical leaf-bases. *L. barbata* is rather more robust than *L. Lyoni*, but the most reliable differential characters are drawn from the leaves. In *L. barbata* these have their antical and postical margins of about the same length and approximately parallel, while the teeth at the truncate apex are three or four in number, subequal in size and obtusely or subacutely pointed. If we should pass a straight line through these teeth, it would lie parallel or nearly so with the axis of the stem. In the leaves of *L. Lyoni* the postical margin is strongly curved and is much longer than the antical, the sharply pointed teeth are commonly three in number and the postical tooth is considerably larger than the others. If we should pass a straight line through these teeth, it would form an acute angle with the axis. *Lophozia Lyoni* is commonly known as *L. quinquedentata*, but there is so much doubt as to what the original *Jungermannia quinquedentata* really was that it seems best to discard the name altogether, as both Pearson and Stephani have recently done, and to take up the later name of Taylor, about which there is no doubt whatever.

The differences between *L. lycopodioides* and *L. Floerkii* are those of degree rather than of kind. *L. lycopodioides* is the more robust of the two, its leaves are larger and more crispate, the teeth are often mucronate instead of being bluntly pointed, the basal cilia are more abundant and more finely divided and the divisions of the underleaves are more conspicuously ciliate. Typical specimens can be distinguished from each other at a glance, but one occasionally meets with forms which are difficult to refer definitely to either species and which apparently represent intermediate forms. As has already been noted both species are almost universally recognized in spite of this fact.

10. Lophozia Marchica (Nees) Steph. Bull. de l'Herb. Boissier, II. 2: 48. 1902. Stephani has recently reduced to this species, as

a synonym, *Jungermannia Mildeana* Gottsche,[1] a form which most European writers have considered distinct. If this reduction is made, and it certainly seems justifiable, then the writer's *J. Novae-Caesareae*,[2] although recognized by Stephani, should apparently share the same fate. Accepting *L. Marchica* in this broad sense it is now known from three New England stations: Beach Mt., Mt. Desert Island, Maine (*E. L. Rand*); Woods Holl, Massachusetts (*A. W. E.*); East Haven, Connecticut (*A. W. E.*). The species is essentially a bog-plant and is commonly found creeping through tufts of *Sphagnum*; in some cases however the plants may be completely covered with water, while in other cases, especially when growing in sandy bogs, they may be exposed to dryness. The plants vary markedly according to the amount of water which they receive, a liberal supply producing elongated stems with scattered leaves while a scanty supply produces short stems with closely crowded leaves. The cell-structure is also variable. Protected and shaded leaves show thin and delicate walls, while leaves exposed to the sun show thickened yellowish walls with more or less conspicuous trigones. A single leaf in fact may show these variations in cell-structure. The dark purple stems which are characteristic of typical *L. Marchica* are paler in some of the other forms and sometimes show no trace of purple; in other cases the color is limited to the bases of the rhizoids and the adjacent parts of the stem. Underleaves are occasionally present in all the forms among the stem-leaves, but they are often very few in number and have the appearance of being abnormal or adventitious. Floral underleaves or bracteoles are of course invariably present.

11. KANTIA SULLIVANTII (Aust.) Underw. This delicate species is now known in New England from the two following localities: Newton, Massachusetts (*W. G. Farlow*) and Woodbridge, Connecticut (*A. W. E.*).

12. SCAPANIA CURTA (Mart.) Dumort. Although this species is not included among the *Scapaniae* described in the Manual, it has been collected near Gorham, New Hampshire, by Professor Farlow and at Jackson in the same State by the writer.

13. ANTHELIA JURATZKANA (Limpr.) Trevis. This arctic and alpine species was collected by the writer on Mt. Washington in

[1] Verhandl. der k. k. zool.-botan. Gesellschaft in Wien, **17**: 626. *pl. 16.* 1867.
[2] Bull. Torrey Club, **20**: 308. *pl. 163.* 1893.

1889. The specimens although scanty show the paroicous inflorescence characteristic of the species and are infested with the peculiar fungous growth which seems to be almost invariably present. The plant has also been reported from Greenland, California and Alaska, but these are apparently the only North American stations that have been recorded. *Scapania curta* and *Anthelia Juratzkana* have recently been described by Howe,[1] who also points out the differences between the latter species and *A. julacea* (L.) Dumort., a plant which may likewise be expected in the White Mountains.

14. Radula obconica Sulliv. The range of this species as given in the Manual is from New Jersey to Ohio. It has been collected by the writer at Hamden, Connecticut.

Yale University.

VARIATIONS OF GLAUX IN AMERICA.

M. L. Fernald.

Those who are familiar with our sea-side flora have doubtless many times come across the blue-green patches of *Glaux* occupying areas of salt-marsh near high-water mark. At any time in summer or fall the plant attracts attention, and if it is found in June or early July it immediately claims our interest by the delicate flowers in the upper leaf-axils. Although the plant belongs to the natural order *Primulaceae* it has no corolla, but instead the calyx is much developed and beautifully colored, either white, rose-pink, or crimson, with more deeply hued centre.

The plant familiar to most botanists whose sea-shore collecting has been only in New England is simple or with a few erect branches, and it has oval or broadly elliptic-oblong leaves generally a centimeter long and rounded at the tip. This erect plant is common in salt-marshes and on muddy sea-shores from the Gulf of St. Lawrence to Nantucket — and it is said to extend even to New Jersey. It was, therefore, of no special interest, in early July last, to find the common erect plant growing below tide-limit on a muddy shore at Cutler, Maine.

[1] Mem. Torrey Club, 7. 1899.

But when, in crossing the flat between Schooner Cove and Corbett's Point, Dr. George G. Kennedy drew attention to a little prostrate *Glaux*, we were greatly interested, for to the others of the party (including Messrs. Emile F. Williams, J. Franklin Collins, and the writer) this form of the plant was equally unfamiliar. The plant at Cutler formed prostrate rosettes rarely a decimeter across, its leaves were narrowly oblong and bluntly pointed, and the flowers were deeply colored throughout, the ordinary white of the calyx-tips being replaced in these plants by a bright lavender. This prostrate plant on the shore of Schooner Cove was well below the high-water mark and during a large part of the day it was completely submerged by sea-water; and since the plant there grew in a very limited area its peculiar habit and deeply colored flowers were thought to be due perhaps to the periodical salt bath it was forced to endure.

Later, however, on July 24th, Mr. Williams and the writer had the good fortune to find the little prostrate *Glaux* with the commoner erect New England form occupying many acres of salt-marsh by the Baie des Chaleurs near Bathurst, New Brunswick. There the two plants grew under identical conditions, large patches of the taller erect plant occurring side by side with equally extensive areas of its dwarf ally. Both forms were somewhat past flowering and many specimens had fairly mature fruit, and it was found that the plants differed not only in the points already noted at Cutler, but that the fruit of the erect broad-leaved form was larger than in the other. Characteristic material of the two forms from the shore of the Baie des Chaleurs was collected, and from a comparison of these and the Cutler plants with the American and Old World specimens in the Gray Herbarium and the herbarium of the New England Botanical Club the following conclusions are drawn.

The prostrate plant first noted at Cutler and afterwards found in great abundance at Bathurst is not confined in America to the "north shore," but has been collected at two points at least on the Massachusetts coast: — Rockport (*J. H. Sears*) and Somerville (*F. S. Collins*). This form proves to be the common *Glaux maritima* of northern Europe and the alkaline districts of interior Asia. But a large number of Old World specimens show that the true (European) *Glaux maritima* is not always prostrate nor even freely branched, for occasional individuals are subsimple and others have short erect branches. In its narrower pointed leaf and small fruit, however, the

Old World material is quite like the smaller plants of Bathurst and Cutler; and the larger subsimple or diffuse specimens from Europe are matched by plants collected by the writer in Maine — at Cape Elizabeth and Southport. The same narrow-leaved plant, though sometimes with a stronger tendency to fastigiate erect branching, occurs in the alkaline district of North America, from Minnesota to the Rocky Mountains.

The other form of *Glaux*, the common erect plant of the New England coast with larger oval or broad-oblong round-tipped leaves and larger fruit, does not seem to occur in Europe, although closely approached by a large simple Scandinavian plant which, however, has narrower blunt-pointed leaves. But, as shown in the Gray Herbarium, this broad-leaved form of our Atlantic coast is also on the Pacific shores from Alaska to California, and even in the interior of the latter state, and like many other characteristic plants of eastern America it occurs upon the coasts of Japan and Amur.

The distinguishing features and the distribution of the two forms of *Glaux* as now understood are:

GLAUX MARITIMA, L. Sp. 207. *Diffusely branched* (rarely simple), the branches prostrate, loosely ascending, or sometimes erect: *leaves linear to oblong*, the larger 3 to 12 mm. long, 1.5 to 6 mm. broad, *bluntly pointed*: flowers 3 to 5 mm. long, variously colored with white, rose pink or lavender, and crimson: *mature capsule* 2 to 3 mm. long, *2 to 2.5 mm. broad.*— Locally along the coast from Baie des Chaleurs, New Brunswick, to eastern Massachusetts; in alkaline districts inland from Minnesota to Saskatchewan, Nevada and Oregon; and in Europe and interior Asia. Passing to

Var. **obtusifolia**. *Erect* (0.5 to 3 dm. high), simple or with few erect branches: *leaves oval or broadly oblong*, the principal ones 8 to 15 mm. long, 4 to 8 mm. broad, *with rounded tips: mature capsule* 3 mm. long, *2.5 to 4 mm. broad.*— Salt marshes and wet muddy or sandy seashores (rarely inland), Gulf of St. Lawrence to Nantucket; Alaska to California; and Amur and Japan. Specimens examined — QUEBEC, Anticosti (*Pursh*): NEW BRUNSWICK, Bathurst, July 24, 1902 (*Williams & Fernald*): PRINCE EDWARD ISLAND, Tracadie Beach, Aug. 6, 1901 (*Churchill*): NOVA SCOTIA, Grand Narrows, Cape Breton, July 27, 1898 (*John Macoun*, Herb. Geol. Surv. Can. no. 19,849): MAINE, Cutler, July 4, 1902 (*Kennedy, Williams, Collins & Fernald*); Mt. Desert Island, June 23, 1890 (*Faxon*): Great

Cranberry Isle, July 17, 1897 (*Williams*); Cape Elizabeth, July 18, 1861 (*Boott*); Biddeford, July, 1891 (*Regester*); Biddeford Pool, July 28, 1900 (*Kennedy*); Kennebunk, July 23, 1885 (*Swan*); Kennebunkport, July 18, 1888 (*Kennedy*); Wells, June 13, 1865 (*Boott*), July 28, 1886 (*Deane*), July 23, 1898 (*Parlin & Fernald*): Massachusetts, Somerville, June 4, 1881 (*F. S. Collins*); Nantucket, Aug. 18, 1878 (*Faxon*): Alaska, Sitka (*Mertens*, *Tiling*); Juneau, July 31, 1891 (*Cooley*): British Columbia, Saturna Island, 1858 (*Lyall*): Renfrew, Vancouver Island, 1901 (*Rosendahl & Brand*, no. 63): Washington, without locality, 1854 (*Cooper*); Bellingham Bay, July, 1890 (*Suksdorf*, no. 989): California, Cisco, 1873 (*Bolander*); Martinez, April, 23, 1854 (*Bigelow*): Amur, without locality (*Maximowicz*): Japan, Yezo, July 10, 1884 (*Miyabe*); Nambu, Nippon, 1865 (*Tschoniski*).

Gray Herbarium.

POGONIA AFFINIS IN VERMONT.

L. R. Jones.

It is always a pleasure to learn of a more extended range or a new station for a rare orchid. This is especially true of one having so insecure a foothold as *Pogonia affinis*. Mrs. Henry Holt advised me of the discovery of what she regarded as that species the first of last June and Mr. Emile F. Williams who has kindly examined the flower and photographs since, has confirmed this opinion. Mrs. Holt found only one plant although diligent search was made for others. It was in a somewhat open, moist woodland near Burlington belonging to Mr. Henry Holt and since there is no danger that the natural environment will be changed the preservation of the station and the discovery of other plants is almost certain. Mrs. Holt transplanted this specimen to her orchid garden where it is apparently thriving; photographs and drawings were made and deposited with the dried flower in the herbarium of the University of Vermont. Mr. Williams in his recent list in Rhodora records this species from Connecticut and Massachusetts; Mrs. Holt's discovery therefore, not only adds Vermont to this list, but extends the range some two hundred miles

to the northward. Owing to its close affinity with *Pogonia verticillata* our local botanists have been stimulated to renewed zeal in their attempts to rediscover that. Robbins and Torrey found the latter near Burlington sixty or more years ago and one of Torrey's specimens is in our University herbarium, but the exact location of their station was unknown and we feared it was exterminated. The recent search was rewarded by the discovery this autumn by Mr. F. A. Ross of several sterile plants of a Pogonia which appears to be *P. verticillata.* The plants are in an open woodland in the vicinity of the Torrey station and possibly, it is the same place. One of our students, Mr. F. G. Helyar has brought us this species from Hinsdale, N. H., opposite Brattleboro, where he reports a colony of the plants, safely secluded. It has not as yet been found in that vicinity on the Vermont side of the Connecticut river.

University of Vermont.

Is Cirsium palustre a Native of New Hampshire? — I recently sent to the Gray Herbarium a thistle which I was unable to identify by the manuals at hand and have learned that the plant is *Cirsium palustre,* Scop., of Europe. As the plant seems to be unrecorded in America it may interest the readers of Rhodora to know something of the conditions under which it grows. There is a colony of this thistle on Tucker Mountain in this township (East Andover, New Hampshire), in a moist forest tangle at an altitude of about 850 feet above sea level, about two miles from the town and railroad, and well removed from cultivated grounds. I have not yet been able to investigate the extent of this colony which may spread all through the tangle of some 20 acres, but this season I saw about fifty mature plants and the same number of seedlings. The plant is very graceful, four to six feet tall, with drooping foliage, narrowly winged stem, and upright inflorescence of small heads. Some of the farmers living nearby think that this thistle has been here a long time. I cannot learn of imported stock, seeds of any kind, or anything in which seeds might have been introduced, having ever been carried upon this mountain. Has it been introduced, or is it a native of our northern woods? I should like to hear from others on this matter.— George W. Holt, East Andover, New Hampshire.

Lamium album in Maine. — In a neighbor's field there is a small well established and thrifty plot of *Lamium album*. The people who own the field have never had the plant in cultivation and until I found it last spring they did not know of its existence. More than a quarter of a mile distant, in the busy part of the town, there is a thrifty growth of the *Lamium* near an old house long used as a department of a large store. The present owner says that the horses eat the plant off several times a year and that it has no care, yet it maintains a vigorous growth. He calls the plant "Snowflake," as I was taught to do. It is possible that we may yet be able to prove it a worthy wild flower of Maine.— Jennie M. H. Morrell, Gardiner, Maine.

PRELIMINARY LISTS OF NEW ENGLAND PLANTS, — X. CAREX.[1]

M. L. Fernald.

[The sign + indicates that an herbarium specimen has been seen; the sign — that a reliable printed record has been found.]

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Carex acutiformis, Ehrh.				+		
" adusta, Boott.	+					
" aenea, Fernald.	+	+	+	+		
" aestivalis, M. A. Curtis.		+		+		
" alata, Torr.		+		+	+	+
" albicans, Willd.	+	+	+	+		
" albolutescens, Schwein.	+	+		+	+	+
" alopecoidea, Tuck.	+		+			
" aquatilis, Wahl.	+	--	+	+		+
" " var. elatior, Babington	+					
" arcta, Boott.	+		+	—		
" arctata, Boott.	+	+	+	+	+	
" " var. Faxoni, Bailey.	+	+				
" " × castanea, Bailey.	+		+			
" atrata, L., var. ovata, Boott.	+	+	+			
" aurea, Nutt.	+	—	+	+	—	+
" Backii, Boott.	+	+	+	+		
" Bebbii, Olney.	+	+	+	+		

[1] Printed in Rhodora as supplementary material.

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Carex Bicknellii, Britton.				+		+
" bromoides, Schkuhr.	+	+	+	+	+	+
" brunnescens, Poir.	+	+	+	+	+	+
" bullata, Schkuhr.	+	—		+	+	+
" " var. Olneyi, Fernald.				+	+	+
" canescens, L.	+	+	+			+
" " var. disjuncta, Fernald.	+	+	+	+	+	+
" " var. subloliacea, Laest.	+	+	+	+		
" capillaris, L.	+	+				
" " var. elongata, Olney.	+					
" capitata, L.		+				
" castanea, Wahl.	+		+			+
" cephaloidea, Dewey.	+	+	+	+	—	+
" cephalophora, Muhl.	+	+	+	+	+	+
" chordorrhiza, Ehrh.	+		+			
" conoidea, Schkuhr.	+	+	+	+	+	+
" Crawei, Dewey.	+					
" Crawfordii, Fernald.	+	+	+	+		
" " var. vigens, Fernald.	+	+	+			
" crinita, Lam.	+	+	+	+	+	+
" " var. gynandra, Schwein. & Torr.	+	+	+	+	+	+
" " var. minor, Boott.	+	+		+	+	
" " var. simulans, Fernald.	+	+		+		
" " × torta, Bailey.	+	+				
" cristata, Schwein.			+	+	+	+
" Davisii, Schwein. & Torr.				+		+
" debilis, Michx., var. Rudgei, Bailey.	+	+	+	+	+	+
" " var. strictior, Bailey.	+	+				+
" " × virescens, Bailey.				+		
" deflexa, Hornem.	+	+	+			
" " var. Deanei, Bailey.	+	+	+	—		
" Deweyana, Schwein.	+	+	+	+	—	+
" digitalis, Willd.	+	+	+	+	+	+
" eburnea, Boott.			+	+		+
" exilis, Dewey.	+		+	+	+	
" festucacea, Schkuhr.	+	+	+		+	
" " var. brevior, Fernald.	+	+	+	+	+	+
" filiformis, L.	+	+	+	+	+	+
" " var. latifolia, Boeckl.	+	+	+	+	+	+
" flava, L.	+	+	+	+		+
" " var. Oederi, Lilj.	+		+	+		+
" foenea, Willd.	+		+	+		+
" " var. perplexa, Bailey	+			+	+	+
" folliculata, L.	+	+	+	+	+	+

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Carex formosa, Dewey.		—	+	+		+
" fusca, Allioni.	+		+	+	+	+
" glaucodea, Tuck.				+		+
" Goodenowii, Gay.	+	+	—	+		
" gracillima, Schwein.	+	+	+	+	+	+
" Grahami, Boott	+					
" granularis, Muhl.		+	—	+		+
" " var. Haleana, Porter.	+		+			
" Grayi, Carey.			+			+
" grisea, Wahl.	+		+	+	+	+
" " var. angustifolia, Boott.				+		+
" gynocrates, Wormsk.	+					
" hirta, L.				+		
" Hitchcockiana, Dewey.			+	+		+
" Houghtonii, Torr.	+	+	+			
" hystricina, Muhl.	+	+	+	+	—	+
" " var. Dudleyi, Bailey.	+		+	+		+
" interior, Bailey.	+	+	+	+	+	+
" " var. capillacea, Bailey.		+		+	+	+
" intumescens, Rudge.	+	+	+	+	+	+
" " var. Fernaldii, Bailey.	+	+	+	+		
" katahdinensis, Fernald.	+					
" laxiculmis, Schwein.	+	—	+	+	+	+
" laxiflora, Lam.	+	+	+	+	+	+
" " var. latifolia, Boott.			+	+		+
" " var. patulifolia, Carey.	+	+	+	+	+	+
" " var. striatula, Carey.			+	+	+	+
" " var. varians, Bailey.	+	+	+	+	+	+
" lenticularis, Michx.	+	+	+	+		
" leporina, L.	+	+		+		
" leptalea, Wahl.	+	+	+	+	+	+
" limosa, L.	+	+	+	+		+
" littoralis, Schwein.						+
" livida, Willd.	+		+	+		—
" longirostris, Torr.	+	+	+	+		+
" lupulina, Muhl.	+	+	+	+	+	+
" " var. pedunculata, Dewey.	+	+	+	+	+	+
" " var. polystachya, Schwein. & Torr.			+	+	—	+
" " × bullata, Fernald.				+		
" lurida, Wahl.	+	+	+	+	+	+
" " var. exudans, Bailey.	+	+		+	+	+
" " var. flaccida, Bailey.	+	+		+		+
" " var. gracilis, Bailey.	+	+	+			+
" " var. parvula, Bailey.	+	+	+	+	.	+

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Carex lurida × lupulina, Bailey			+	+		+
" magellanica, Lam.	+	+	+	+		
" maritima, O. F. Mueller.	+	+		+		
" " var. erectiuscula, Fernald.	+					
" Michauxiana, Boeckl.	+	+	+			
" mirabilis, Dewey.	+	+	+	+	+	+
" " var. perlonga, Fernald.		+	+	+	+	+
" " var. tincta, Fernald.	+	+	+			
" Muhlenbergii, Schkuhr.	+	+	+	+	+	+
" " var. enervis, Boott.				+	+	+
" muricata, L.				+	+	
" nigro-marginata, Schwein.						+
" norvegica, Willd.	+					
" Novae-Angliae, Schwein.	+	+	+	+		
" oligocarpa, Schkuhr.			+	+		+
" oligosperma, Michx.	+	+	+	+		+
" oronensis, Fernald.	+					
" pallescens, L.	+	+	+	+	+	+
" panicea, L.	+			+	+	
" pauciflora, Lightf.	+	+	+	+		+
" pedunculata, Muhl.	+	+	+	+		+
" pennsylvanica, Lam.	+	+	+	+	+	+
" " var. lucorum, Fernald.	+	+	+	+	+	+
" pilulifera, L.	+	+	+	+	+	+
" " var. longibracteata, Lange.	+	+	+	+		
" plantaginea, Lam.	+	+	+	+		+
" platyphylla, Carey.	+	+	+	+	+	+
" polymorpha, Muhl.	+			+	+	+
" Porteri, Olney.	+					
" praecox, Jacq.				+		
" prasina, Wahl.	+	+	+	+	+	+
" pratensis, Drejer.	+					
" Pseudo-Cyperus, L.	+	+	+	+		
" " var. americana, Hochst.	+	+	+	+	+	+
" ptychocarpa, Carey.				+	+	+
" pubescens, Muhl.	+	+	+	+	—	+
" rariflora, J. E. Smith.	+					
" retrorsa, Schwein.	+	+	+	+	+	+
" " var. Hartii, Gray.		+	+			
" **retrorsa × rostrata** (*C. retrorsa* × *utriculata*, Fernald).						+
" rigida, Good., var. Bigelovii, Tuck.	+	+	+			
" riparia, W. Curtis.	+	+	+	+	+	+
" rosea, Schkuhr.	+	+	+	+	+	+

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Carex rosea var. minor, Boott.		+	+	+		+
" " var. radiata, Dewey.	+	+	+	+	+	+
" " var. retroflexa, Torr.	+	+		+	+	+
" rostrata, Stokes.	+	+	+	+	+	+
" " var. ambigens, Fernald.	+					
" " var. utriculata, Bailey.	+	+	+	+		+
" rotundata, Wahl.	+					
" salina, Wahl., var. cuspidata, Wahl.	+	+		+		
" saxatilis, L.	+					
" " var. miliaris, Bailey.	+					
" " var. rhomalea, Fernald.	+					
" scabrata, Schwein.	+	+	+	+	+	+
" " × crinita, Fernald.			+			
" Schweinitzii, Dewey.			+	+		+
" scirpoides, Michx.	+	+	+			
" scoparia, Schkuhr.	+	+	+	+	+	+
" " var. condensa, Fernald.	+	+	+	+	+	+
" " var. moniliformis, Tuck.	+		+	+		
" seorsa, E. C. Howe.				+	+	+
" setacea, Dewey.			+	+		+
" siccata, Dewey.			+	+	+	+
" silicea, Olney.	+	+		+	+	+
" sparganoides, Muhl.		+	+	+	—	+
" squarrosa, L.					+	+
" stellulata, Good. (*C. echinata* of authors, not Murray).	+	+	+	+	+	+
" " var. angustata, Carey.	+	+	+	+	+	+
" " var. **cephalantha** (*C. echinata*, var. *cephalantha*, Bailey).	+			+	+	+
" " var. **excelsior** (*C. sterilis*, var. *excelsior*, Bailey).	+	+	+	+	+	+
" " var. **ormantha** (*C. echinata*, var. *ormantha*, Fernald).					+	+
" sterilis, Willd.	+			+	+	+
" stipata, Muhl.	+	+	+	+	+	+
" straminea, Willd.	+	+	+	+		+
" striata, Michx., var. brevis, Bailey.				+	—	
" stricta, Lam.	+	+	+	+	+	+
" " var. angustata, Bailey.	+	+	+	+	+	+
" " var. curtissima, Peck.	+	+		+		
" " var. decora, Bailey.	+	+	+	+	+	+
" " × salina, Bailey.				+		
" " × torta, Fernald.			+			
" styloflexa, Buckley.				—		+

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Carex subulata, Michx.					+	
" tenella, Schkuhr.	+	+	+	+		+
" tenera, Dewey.	+			+	+	+
" " var. invisa, Britton.	+	+		+	+	
" " var. Richii, Fernald.				+		+
" tenuiflora, Wahl.	+		+	—		
" teretiuscula, Good.	+		+	+	+	+
" " var. ramosa, Boott.	+		+	+		+
" tetanica, Schkuhr.				+		+
" " var. Meadii, Bailey.					—	
" " var. Woodii, Bailey.				+		+
" torta, Boott.	+	+	+	+	—	+
" tribuloides, Wahl.	+	+	+	+		+
" " var. turbata, Bailey.			+			+
" " var. reducta, Bailey.	+	+	+	+		
" triceps, Michx., var. hirsuta, Bailey.	+		+	+	—	+
" trichocarpa, Muhl.				+		
" trisperma, Dewey.	+	+	+	+	+	+
" " × tenuiflora, Fernald.	+					
" Tuckermani, Dewey.	+	+	+	+	—	+
" typhinoides, Schwein.			+	+		
" umbellata, Schkuhr.	+	+	+	+	+	+
" " var. brevirostris, Boott.	+	+				
" " var. tonsa, Fernald.	+					+
" vaginata, Tausch.	+		+			
" varia, Muhl.	+	+		+	+	+
" " var. colorata, Bailey.	+	—		+		+
" vesicaria, L.	+	+	+	+	+	+
" " var. distenta, Fries.	+		+			
" " var. jejuna, Fernald.	+	+	+	+	+	+
" " var. monile, Fernald.	+	+	+	+	+	+
" vestita, Willd.	+	+		+	+	+
" " var. Kennedyi, Fernald.				+		
" virescens, Muhl.	+	+	+	+	+	+
" " var. costata, Dewey.	+	+	+	+	+	+
" " × arctata, Fernald.		+				
" vulpinoidea, Michx.	+	+	+	+	+	+
" Willdenovii, Schkuhr.	+			+		+
" xanthocarpa, Bicknell.	+	+	+	+	+	+
" " var. annectans, Bicknell.				+		+

Notes upon the above List.— *Carex Emmonsii*, var. *elliptica*, Boott, is *C. albicans*, Willd., while *C. Emmonsii*, Dewey, is identified

with *C. varia*, Muhl. The latter species is abundant in Rhode Island; but in Bennett's Plants of Rhode Island only the former is listed. Since *C. albicans* (*C. Emmonsii*, var. *elliptica*) is a plant of the interior calcareous districts, its report from Rhode Island was presumably a mistake for the common *C. varia* of the coastal regions.

Carex flava. Six marked forms of *C. flava* and *C. Oederi* occur in New England, and all these forms are identified with well known Old World varieties. At present, however, the group is in need of critical revision, impossible to accomplish satisfactorily in American herbaria; and until the American forms can be properly examined in the light of authentic European material they have been roughly classified into

C. flava, L. Beak as long as the body of the perigynium, often becoming bent or retrorse, at least at maturity.

Var. *Oederi*, Lilj. Beak distinctly shorter than the body of the perigynium, straight or scarcely bent, ascending or horizontally spreading, hardly retrorse.

It is hoped that a more satisfactory treatment of the forms can soon be made.

Carex Goodenowii, Gay, Ann. Sci. Nat. ser. 2, xi. 191 (*C. vulgaris*, Fries, Nov. Mant. iii. 153. *C. rigida*, var. *Goodenovii*, Bailey in Gray, Man. ed. 6, 735 c), a plant of the coastal plain, presents many forms from 0.5 to 9 dm. high, with pistillate spikelets from 0.5 to 7 cm. long. Field-study shows these extremes to be largely due to conditions of soil and exposure and to merit no separation into varieties. This species primarily of the coastal regions has the perigynia faintly nerved below, and its leaves (rarely 3 mm. broad) are *involute* at the margin in drying. (See note on *C. rigida.*)

Carex limosa was reported in Bennett's Plants of Rhode Island from Johnston and Quidnessett. No Johnston material is preserved in the Bennett herbarium; but the Quidnessett specimen labelled *C. limosa* proves to be *C. filiformis*.

Dr. P. A. Rydberg has recently proposed the name *Carex praticola* (1900) to replace *C. pratensis*, Drejer (1841), because of the earlier *C. pratensis*, Hose (1797); and in a recent treatment[1] of the plant I have followed Dr. Rydberg. Upon more recent study, however, I am unable to find references to Hose's species by European caricologists, and until that is more clearly shown to be a valid species it is

[1] Proc. Am. Acad. xxxvii. No. 17, 471 (1902).

better to retain for the plant of Greenland and North America the well established name of Drejer.

Carex rigida, Good., with short dark spikelets, occurs in extreme northern Europe and America and in the Rocky Mountains. Our representative, var. *Bigelovii*, Tuck., occurs also in northern Europe and it differs only in its taller habit and looser spikelets from typical *C. rigida*. It is a plant of arctic and alpine districts, quickly separated from the lowland *C. Goodenowii* (see note above) by its looser purplish spikelets and nerveless perigynia, and especially by its broad leaves (3 to 6 mm. broad) which have *revolute* margins in drying.

In the Herbarium of Brown University there is a sheet of loose material of *Carex Schweinitzii* marked by the late J. L. Bennett "Rhode Island." There is, however, a sheet of similar material from S. U. Cowles collected in Cortland Co., New York; and it is probable that the other sheet was labeled "Rhode Island" through some misinterpretation.

All the Vermont material which the writer has received as *Carex squarrosa* is better referred to *C. typhinoides*.

Since discussing[1] in detail as *Carex echinata* the plant long known to European and American botanists as *C. echinata*, Murray, or *C. stellulata*, Goodenow, I have received from Mr. Theodor Holm permission to use a quotation from a letter sent to him by Mr. C. B. Clarke, the eminent student of the *Cyperaceae*. Mr. Clarke, as quoted by Mr. Holm in a recent letter, wrote under date of June 30, 1901: "C. echinata, Murr. is = C. divulsa, Gooden. and *not near* C. stellulata, Gooden. The original sheet of Murray is in the British Museum, inscribed in his own hand as his *echinata*; it is a very good specimen, and Jas. Britten (or any other botanist at the British Museum) will tell you that there can be no dispute about this identification." The names *C. echinata* and *C. stellulata* have long been interchangeable in European and American botanical literature; but as a result of Mr. Clarke's identification of the Murray type the name *C. echinata* must be applied to another European plant, while the circumboreal species, represented by various forms in Europe, Asia, and America, must be called *C. stellulata*, Goodenow.

Carex stricta, Lam., presents very diverse forms, but a study of

[1] Proc. Am. Acad. xxxvii. no. 17, 453–456, 483–484 (1902).

these fails to show any characters by which they can be clearly separated. *C. Haydeni*, Dewey (*C. aperta*, Carey, not Boott. *C. stricta*, var. *decora*, Bailey) is often separated specifically, but none of the characters relied upon for its separation are sufficiently constant to justify its specific recognition. All the forms of *C. stricta* pass too freely into one another, and any division of the species is necessarily arbitrary; but, in the main, the following arrangement will be found to cover the more marked extremes in New England.

Perigynium elliptic, tapering about equally at tip and base.
Pistillate spikelets densely flowered, slightly if at all attenuated at base, mostly pistillate throughout: scales blunt, shorter than or equaling, rarely exceeding, the perigynia.
Pistillate spikelets 2 to 7 cm. long. . . . *C. stricta.*
Pistillate spikelets 0.5 to 1.5 cm. long. *C. stricta*, var. *curtissima.*
Pistillate spikelets rather loosely flowered, long-attenuate at base, 2 to 12 cm. long, the upper often with staminate tips: scales acutish, equalling or exceeding the perigynia. *C. stricta*, var. *angustata.*
Perigynia obovate to orbicular, rounded at tip, much shorter than the attenuate scales: pistillate spikelets mostly dense, 1 to 4 cm. long. *C. stricta*, var. *decora.*

Carex **trisperma × tenuiflora.** Leaves and culms blue-green; the former 1.5 to 2 mm. broad; the latter stiff, 3 to 6 dm. high, sharply triangular; spike stiff; spikelets 2 to 4, distinct or the upper approximate, the lowest mostly 0.5 to 1.5 cm. apart, elliptic, 4 to 7 mm. long, bractless, or the lowermost with a subtending bract which often equals or exceeds the spike: scales ovate, whitish with green midribs, blunt or acutish: perigynia (rarely well developed) elliptic, 3 to 3.2 mm. long, 1.5 mm. broad, about 7-nerved on either face, with a short hyaline beak.—With the two parents, in an arbor-vitae swamp, Fort Fairfield, Maine, July 19, 1902 (*E. F. Williams, J. F. Collins, & M. L. Fernald*—Plantae Exsiccatae Grayanae, no. 110).

Exactly intermediate in habit between the two parent species. The color and stiff habit suggest *C. tenuiflora*; the frequent long bracts are those of *C. trisperma*; while the lowest spikelets are more remote than in *C. tenuiflora*, but distinctly more approximate than in the more delicate flexuous *C. trisperma*. The small perigynium, when well developed, is similar to that of *C. tenuiflora*, but with a definite though short hyaline beak (shorter than in *C. trisperma*, longer than in *C. tenuiflora*); while the faces are more distinctly nerved than in *C. tenuiflora*, though less abundantly so than in *C. trisperma*.

The following species and varieties, formerly reported from Ver

mont, are not admitted to the recent Flora of Vermont by Brainerd, Jones, & Eggleston, and are consequently omitted from the present list of Vermont *Carices*: — *Carex Crawei*, *C. gynocrates*, *C. rosea*, var. *radiata*, *C. striata*, *C. Shortiana*, *C. tetanica*, var. *Meadii*, *C. trichocarpa*, *C. varia*, *C. vestita*.

Two European species, *Carex fulva*, Good., and *C. laevigata*, J. E. Smith, were found, early in the last century by B. D. Greene, introduced at Tewksbury, Massachusetts. They have apparently quite disappeared from the original station. *C. fulva*, known to Goodenow from "America and Newfoundland," occurs in bogs on Anticosti and may yet be found on the eastern coast of Maine.

Carex Careyana is included by Professor Bailey in the 6th edition of Gray's Manual from New England, but no more definite record has been found for this species usually confined to the Alleghanies and the region further west. The nearest approach of the plant to New England seems to be in Jefferson Co., west of the Adirondacks, in New York.

Carex elachycarpa, a species recently described from northern Maine, proves upon study of more abundant material in various stages of development to belong to some other genus of the *Cariceae*, and the species is consequently omitted from the foregoing list.

Suggestions for Special Observations.

Certain species so closely approach the borders of states in which they have not yet been detected that it is perhaps worth while to call attention to them, that local botanists may know where these plants are specially to be sought.

Carex aenea occurs in Sheffield, Berkshire Co., Massachusetts (*Hoffmann*) and should be sought in adjacent Litchfield Co., Connecticut.

Carex aestivalis, found at the base of Mount Monadnock (*Churchill*) and in the intervales of the Cold River, Cheshire Co., New Hampshire, on Grey Lock and Saddle Mountains, Berkshire Co., Massachusetts (*Wm. Boott*), and from Pennsylvania southward, should be sought in southern Vermont and western Connecticut.

Carex albolutescens, usually confined to the coastal plain, has been found on Mount Monadnock, New Hampshire (*R. M. Harper*), on the Dome (Mt. Everett) at Sheffield, Berkshire Co., Massachusetts (*Hoffmann*), and in the adjacent mountains of Columbia Co., New

York (*Hoysradt*). It is to be looked for in the Taconic Range in southern Vermont.

Carex alpina, Swartz, is reported from the Restigouche River, New Brunswick, and should be sought along the St. John and its tributaries in Maine.

Carex Bebbii is known in western Berkshire Co., Massachusetts, quite to the southern border, Sheffield (*Hoffmann*), and is probably in adjacent Litchfield Co., Connecticut.

Carex Bicknellii is known as far north as Fitchburg and Shirley, Massachusetts (*W. P. Conant*) and may be expected in southern New Hampshire. It occurs in southern Worcester Co., Massachusetts (*Harper*) and is probably in northwestern Rhode Island.

Carex canescens, in its typical northern form, grows among the Green Mountains of Vermont and has been found at Southington, Connecticut (*Bissell*). It should be looked for in western Massachusetts.

Carex capillaris, var. *elongata*, grows in arbor-vitae swamps of Aroostook Co., Maine and Cortland Co., New York. It may be expected in similar situations in northern New Hampshire and Vermont.

Carex capitata. The summit of Mount Washington, New Hampshire, is the only known American station east of Hudson Bay, but the plant should be sought on Katahdin and the other high mountains of north-central Maine.

Carex castanea occurs in the Connecticut and Champlain valleys of northern Vermont, and should be watched for in northwestern New Hampshire. It is also at Salisbury, Connecticut (*Oakes*) and is to be expected in Berkshire Co., Massachusetts.

Carex chordorhiza approaches the Massachusetts border at Pownal, Vermont (*Churchill*) and should be found in the swamps of Berkshire County.

Carex concinna, R. Br., reported from the Restigouche River, New Brunswick, may be watched for in Aroostook Co., Maine.

Carex Crawei follows the St. Lawrence valley from the Great Lakes to Anticosti (*Macoun*) and extends southward on marly or calcareous shores to the Aroostook River, Maine, and to Herkimer Co., New York. It is to be expected in the Champlain valley.

Carex eburnea occurs on calcareous rocks in Victoria Co., New Brunswick and will doubtless be found in adjacent portions of Aroostook Co., Maine.

Carex exilis is frequent in bogs of Essex Co., Massachusetts, and will probably be found in adjacent New Hampshire. It is found in Rhode Island and on Long Island, New York, and may be sought in the coastal swamps of Connecticut.

Carex Grayi, occurring very locally in Vermont, eastern New York, and in central Connecticut, may be looked for in western Massachusetts.

Carex gynocrates abounds in arbor-vitae swamps of northern and central Maine and is found in swamps in Herkimer Co., New York. It should be sought in similar habitats in northern New Hampshire and Vermont.

Carex leporina, known from hillsides of Cheshire Co., New Hampshire (*Rand*, *Robinson*, *etc.*) and from the Adirondacks of New York (*Haberer*), should be watched for in Vermont.

Carex lurida, var. *gracilis*, frequent in Vermont and now known from one station in Connecticut, should be found in Western Massachusetts.

Carex magellanica follows the mountains to southern Berkshire Co., Massachusetts — Becket, etc. (*Dewey*) — and is likely to be found in Litchfield Co., Connecticut.

Carex Novae-Angliae, long known from Berkshire Co., Massachusetts, extends at least to Corry, Pennsylvania (*Churchill*) and may occur in western Connecticut.

Carex oligosperma, known from scattered swamps in Massachusetts and from Groton, Connecticut (*Graves*) is to be sought in Rhode Island.

Carex pedunculata, found at Southbridge, Massachusetts (*Harper*) and at Franklin, Connecticut (*Graves*) should be expected in northwestern Rhode Island.

Carex polymorpha occurs at Wells, Maine (*Blake*) and may be sought in adjacent New Hampshire.

Carex scirpoidea, found at 2000 ft. altitude on Mount Equinox in southwestern Vermont (*Miss Day*) should be carefully sought on Mount Grey Lock, Massachusetts.

Carex sterilis (*C. atlantica*, Bailey), usually confined to coastal swamps from the Gulf of St. Lawrence to Florida, occasionally occurs inland in Maine, in Hartford County, Connecticut, and in Essex Co., New York, and may be watched for in New Hampshire and Vermont.

Carex striata, var. *brevis*, follows the sandy coast of New Jersey, Long Island, and Cape Cod (Bailey, Evolution of Our Native Fruits, 416) and may be expected in the drier sections of southern Connecticut.

Carex subulata, known from Long Island, New York, and from Washington Co., Rhode Island (*Thurber*), may be looked for in southeastern Connecticut.

Carex tenuiflora, frequent in arbor-vitae swamps of Maine and northern Vermont, will doubtless be found in northern Coos Co., New Hampshire.

Carex teretiuscula, occasional in swamps of southern York Co., Maine (*Parlin*) and Essex Co., Massachusetts (*Sears*), may be expected in southeastern New Hampshire.

Carex trichocarpa occurs in northwestern Berkshire Co., Massachusetts (*Churchill*) and will probably be found in Bennington Co., Vermont.

Gray Herbarium.

Seed-throwing of Viola.—The article of R. G. Leavitt on "Seed Dispersal of Viola rotundifolia" in the September Rhodora I read with much interest. When I began to cultivate plants in a botanic garden some twenty-five years ago, I thought it would be very nice to have as many kinds of violets as I could get, growing close together in one group. All went well for about three years when I found my plants hopelessly mixed, because the seeds were shot several feet from the parent plants. For a long time I have planted the violets each in a separate place about the garden to enable me to keep them pure. The best shooter of the lot is *Viola alpestris*, which frequently scatters its seeds ten feet in either direction.— W. J. Beal, Agricultural College, Michigan.

Vol. 4, no. 46, containing pages 191 to 206, was issued 18 October, 1902.

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